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# 農業計算学研究

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(阿部亮耳教授定年退官記念号)

京都大学農学部

農業簿記研究施設



阿部亮耳教授

## 献 辞

本研究施設阿部亮耳教授は、京都大学の定めるところにしたがって、平成2年3月末日をもって、本学を退官されることになりました。

教授は、昭和33年11月農学部助手に任命、農林経済学科に勤務され、36年6月に本研究施設の助教授に昇任、昭和57年2月に本研究施設の農業簿記部門担当の教授に就任、今日に至っております。その間、本研究施設長をはじめ学内の要職を歴任されるとともに、30余年の長きにわたって本研究施設の学問的使命達成と発展に御尽力いただいてきたところであります。

このたび、教授の御退官を記念して、本研究施設の専・併任教官をはじめ同教授が簿研在職中に親しく御指導いただいた関係各位にも寄稿を依頼し、『農業計算学研究』22号を『阿部亮耳教授定年退官記念号』として編集、刊行することといたしました。

ここに教授の長年の御業績と御貢献をたたえ、この記念号を教授に捧げる次第であります。

平成 元 年 12 月 佳日

編集者代表 亀 谷 晃

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## 目 次

農業経営の財務的成長分析の理論と検証……………	亀 谷 晃…………	( 1 )
——自立酪農経営の成長分析と動向——		
農業法人における会計の課題と方法……………	稲 本 志 良…………	( 13 )
——農業生産法人の管理会計を中心に——		
自計式農家経済簿の様式改訂に関する考察 ( I ) ……	桂 利 夫…………	( 23 )
農家経済における資金計算書の開示……………	常 秋 美 作…………	( 33 )
パーソナル・コンピュータの発展と農業簿記における		
利用……………	白 川 雄 三…………	( 43 )
部門間の依存性と資源配分……………	小 野 博 則…………	( 51 )
タイのコメ生産費の地域・作期格差および時系列		
変化とその意義……………	辻 井 博…………	( 63 )
しいたけ種菌の品種選択に関する考察……………	西 井 一 成…………	( 73 )
和牛繁殖経営の担い手構造と経営の展開方向……………	新 山 陽 子…………	( 85 )
大規模肉牛農家の経営財務の予測……………	横 溝 功…………	( 95 )
原料用馬鈴しょの取引様式と駆引行動……………	浅 見 淳 之…………	( 105 )
加工食品の消費・購買に関する消費者の意識と行動……………	加 茂 祐 子…………	( 115 )
農業の公益的機能に関する評価と政策……………	宮 崎 猛…………	( 125 )
韓国における農業機械化事業と制度金融のあり方……………	李 榮 萬…………	( 135 )
農業者教育施設の歴史と新農業大学校について……………	嘉 住 熊 二…………	( 147 )
——京都府における農業大学校を中心として——		
農業簿記研究施設32年間の回顧と展望……………	阿 部 亮 耳…………	( 159 )

# 正 誤 表

校正・印刷の最終段階で、次のような  
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お詫びして、訂正方よろしくお願いします。

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108頁	→106頁
106頁	→107頁
107頁	→108頁

## SUMMARIES OF ARTICLES

### A Theory on Financial Growth Analysis of Farm Management and Its Application

—Growth Analysis and Situation of *Jiritsu* Dairy Farms—

Kiyoshi KAMEGAI

In this paper a theory of financial growth analysis of farm management is presented, and the theory is applied to the actual farm management data in Japan.

Financial growth analysis is financial analysis and planning of growth of farm management through investment and financing. It also means a growth analysis using financial statements such as balance sheets and income statements. The theory of financial growth analysis explained here uses the growth of equity of farm management as a basic criterion of the financial growth. The theory is applied to the data of *jiritsu* dairy farms collected by Ministry of Agriculture, Forestry, & Fishery for the period of 1970 – 1987.

### A Study on Scope and Method of Managerial Accounting at Farm Corporations

Shiro INAMOTO

This paper attempts to identify areas and a method of analyzing managerial accounting of farm corporations. First, legal types of farm corporations were compared with large firms in non-agricultural sectors, particularly regarding differences in accounting between small family farm in agriculture and large firms in non-agricultural sectors from perspectives of formal, practical, and economic aspects. Second, areas and characteristics of management system of farm corporations are analyzed. Finally, possibility and limitations of applying managerial accounting systems of large firms in non-agricultural sectors for corporations in agricultural sector are analytically evaluated.

# An Investigation of Improvements in the System of Self-Accounting Book-Keeping

Toshio KATSURA

Self-Accounting Book-Keeping was created by Professor Masao OOTSUKI of Kyoto University in 1934. This is the prototype and the most improved types of agricultural book-keeping in Japan.

For the improvement of the book-keeping system it is necessary to investigate the system practically by actually keeping the book, and to improve its system theoretically. In this paper the improvements of Self-Accounting Book-Keeping are investigated as follows:

- 1) Creation of Self-Accounting Book Keeping.
- 2) Change of names of the system and its author.
- 3) Improvements in cash transaction method.
- 4) Improvements in labor day book.
- 5) Improvements in transaction items.

## Showing on the Flow of Funds Statement for Family Farm Economy

Misaku TSUNEAKI

There have been many discussions for funds on business enterprises, since "Where-got, Where-gone" under the title of "Their Construction and Interpretation for Business Men and Students of Affairs" was written by W. M. Cole in Accounts 1908. But in a field of account for farm family, the discussion of funds or cash-flow has been not always enough for his management of farm and household. Therefore, it is necessary to clarify meaning of cash-flow accounting, concept of funds and way of showing on the flow of funds statement for family farm economy. The major results are as follows; 1) The meaning of cash-flow accounting for farm family is to have continuously a capacity for payment with taking informations of cash-flow and financial fluctuation from accounting. 2) Not merely cash on hand, but also ordinary, time and installment deposit or savings should be included into the concept of funds in the case of farm family. 3) In order to show



the flow of funds statements both on farm activities and household activities, setting account titles and record rules must be previously designed in the concrete.

## A Study about Farm management and Personal Computer

YUZO SHIRAKAWA

In 1977, One of the first personal computer was made by Apple Computer. This computer was named Appel. After that, personal compuer has been highly developed. Ten years ago, Farm Accounting System using personal computer wasn't so useful. Becouse, *kanji* couldn't be used and the operation of personal computer was difficult. But now, more than 3000 farms in Japan use personal computers for farm management. In these days, personal computers are very important for farm management informations system.

## Resource Allocation and Dependences between Sections

Hironori ONO

The notions of dependences between sections must be clarified and established in order to analyze the efficiency of resource allocation between sections in the organization. In this paper these dependences are defined and classified in comparison with externalities between firms.

Then, as one aplication of the notions of dependences to the real world, dependences between sections in the organization of the agricultural cooperation are explained. Based on this analysis, the economic meaning of "*sogosei*", which is the important merit of the management in the cooperation with some sections, are sought in the viewpoint of the efficiency of resource allocation in stead of the traditional view.

# Inter-regional, Inter-seasonal and Time Series Analysis of Rice Production Cost in Thailand

Hiroshi TSUJII

Based on my paper regarding the method of collecting, estimating and presenting the rice production cost of Thailand appeared in the twenty first issue of this journal, inter-regional, inter-seasonal and time series analysis of the cost is conducted.

The major findings are as follows :

1. The main-season production cost in real term has declined by about twenty percent from 1973 to 1987. The off-season cost in real term has also declined by about forty percent from 1974 to 1987.
2. It is found from the comparison of rice production cost structures between main-season and off-season that the production technologies used in these two seasons are very different. In main-peason, rice is produced using large amount of labor and draft animals, while using almost no modern inputs such as fertilizers and chemicals. In the off-season, however, modern and intensive rice production technology using machines, fertilizers, and chemicals is used.
3. The off-season average production cost per unit of paddy produced is about twenty percent cheaper than main-season, mainly because paddy yield in off-season is about twice as large as main-season.
4. Inter-regionally, paddy has been produced at highest cost in the Northeast Region, and at the lowest cost in the North Region.

## A Study on the Choice of the Variety of Shiitake Mushroom Spawn

Kazushige NISHII

Since the discovery of the pure culture methode of shiitake mushroom spawn, the production of shiitake mushroom has steadily increased. More than 260 cultivars (varieties) among the spawns on the market were analysed by the Forestry Agency and the numbers of reported spawn makers amounted to 126 in 1983.

This study intended to analyse the relation between the degree of the necessity of the choice and the criteria of the choice for shiitake mushroom cultivators.

The result indicated mushroom cultivator's characteristic process of the choice of variety. As the important purpose of the improvement of variety was generally to increase the adaptability to natural phenomena, the natural condition played an important role for the crop cultivators to decide their varieties. But for the mushroom cultivators, owing to spawn makers' great efforts for its improvement, the process of their choice was different from the other crops cultivators.

## Study on Structure of Wagyu Caw-calf Operations and Direction of Development in the Operation

Yoko NIIYAMA

The beef import liberation is right around the corner, and the beef farming in Japan is facing a new stage. In addition, domestic situation of beef farming is changing radically, and some serious problems are emerging. These problems are such that the age of farmers is getting higher and higher, and that it is very difficult to get successors. Since farming has succeeded by a lineal ascendant in Japan, the above two problems directly result in decrease in number of farms raising beef cattle, and thus, decrease in the beef supply itself. It should be noticed that these changes are occurring most radically in the field of Wagyu caw-calf operations, which is at present the most quality-competitive internationally.

The aim of this study is as follows. Firstly, we reveal the trend of beef production and clarify those problems. Through analyzing number of farms raising beef cattle, number of beef cattle being raised and farmer's age by cow herd size.

Secondly, we clarify the direction of development in beef farming. We particularize the subjects of farm size, farm organization and farm efficiency.

Thirdly, we present a feasible model of Wagyu caw-calf operation, which is expected to show higher performance. We will check the model with some cases.

# Forecast of Financial Management of Large-scale Beef Farms

Isao YOKOMIZO

We forecast that many Japanese beef farms will be damaged by liberalization of Japanese beef markets. The objective of this paper is to present a forecasting method of beef farms' financial management, and actually apply this method to four beef farms which belong to an agricultural co-operative in Ehime prefecture. A recursive linear programming was used this method

The features of this method are as follows :

- (1) Beef farms' financial flow which is brought about by supplying the money of A agricultural to co-operative is incorporated in a programming models as behavioral constraints.
- (2) The objective function is surplus of beef farm household economy in cash basis.
- (3) In this model, the optimum combination of Japanese beef cattle and fatting dairy breed bulls is decided.

If we give the balance of the short-term liability and the quick asset at the head of a year as behavioral constraints to this model, we can get the balance of those at the end of a year as the optimum solution, and likewise the balance of those at the end of a year becomes the balance of those at the head of the next year, and automatically the balance of those at the head of the next year becomes behavioral constraints for the next year's forecasting.

## Transaction Form and Opportunism of Potatoes for Starch and Potato Chips

Atsuyuki ASAMI

There are mainly three ways of using potatoes, that is, 1) eating, 2) making starch, and 3) making chips. Potatoes for eating are transacted through a wholesale competitive "spot market" by auction. But potatoes for starch are transacted from farms to agricultural cooperative starch process factory directly, which means "internal transaction". Potatoes for chips are sold from farms to

chips makers under the continuing contract, which means "customer market". I explain why such differences of transaction form occur by the concept "opportunism" in the case study of Tokachi Area, Hokkaido.

Opportunism is defined as strategic behavior to realize individual advantage, involving self-interest seeking with guile. If either of saler or buyer transacts opportunistically, distorted equilibrium point, which is advantageous to either, will be realized on the contract curve.

Before the forms of internal transaction and customer market; continuing transaction forms are spread, Potatoes for starch and chips were transacted through imperfect spot market system. In this system either of saler or buyer was apt to transact opportunistically.

As for starch potatoes, the processors of starch abused the information impact-edness opportunistically, so the price of potatoes was reduced under the real price, which was advantageous to processors. Then farmer's cooperative began to operate process factory by themselves to exclude opportunism and actualize the real price.

As to chips potatoes, when the demand of potatoes increased suddenly in 1970 concerned with EXPO '70, farmers broak their one-year contracts and raised the price too high opportunistically. So there happened a lot of chips maker's bankruptcy. Then now, makers become making continuing contracts with farmers to keep the price constant.

I conclude that, concerned with potatoes for starch and chips, continuing transaction forms are spread in stead of spot market to exclude opportunism.

## Consumers' Consciousness and Behavior toward Processed Food Consumption

Yuko KAMO

Analysis of data gathered from the questionnaires to housewives concerning consumers' consciousness and behavior toward processed food consumption can be summarized, comparing the case of meat products with the case of pickled vegetables as follows :

- 1) In various respects, consumers' belief towerd the advantage of taking meat products is stronger than that of taking pickled vegetables.
- 2) Consumers choose product more carefully paying attension to the quality when they buy meat products than when they buy pickled vegetables.

- 3) The major source which gives the information about the quality of product to the consumers is different between meat products and pickled vegetables.
- 4) Consequently, the contrast between meat products and pickled vegetables concerning consumers' consciousness and behavior toward product consumption as mentioned above seems to be caused by the difference of history, kind of useable dish, technology used for food processing industry, etc. between these two processed foods.

## Environmental Accounting and Policy for Regional Agriculture

Takeshi MIYAZAKI

Economic factors which determine the rent for environment preservation by agriculture are the solvency of government or consumer and the amount claimed from farmer. Environmental policy for regional agriculture is approvable when the solvency is over the amount claimed from farmer.

Land use control techniques which assist agricultural land protection and preservation in urbanizing area fall into three major categories: zoning, direct acquisition, economic assistance for farmers. They are a part of environmental policy for regional agriculture. Zoning is one of the most common mandatory techniques to preserve farmland. Direct acquisition consist of purchase of development rights, purchase lease-back, transfer of development rights, etc. Economic assistance for farmers consist of preferential tax, subsidy, etc.

Two case study designed to assist in understanding agricultural land use control techniques are reported. First case is the technique of zoning and subsidy in Ichikawa City. Second case is the technique of zoning and purchase lease-back in Asuka Village.

## A Study on the Farm Mechanization and Institutional Financing in Korea

Youngman LEE

The objective of this study is to investigate the optimal interest rate of the institutional financing for farm mechanization.

Interest rate of institutional financing to improve farm mechanization is lower than interest rate of other financing because of internal capital rationing in agricultural sector and the gap between private rate of return and social rate. Farmers thought that return rate of farm machinery investment had been low and unstable, had been come out long term. Therefore, interest rate of institutional financing of farm machinery investment has to be lower than market interest rate.

The return rate of farm machinery was computed by sample surveys. The return rate of tractor, power tiller and binder was less than 10%, except transplanter and combine harvester. Especially, the return rate of binder and grain dryer was negative. Therefore, interest rate of institutional financing must be lowered.

## The History of Farmers' Education Institutions and a New Farmers' College

—With Special Reference to Farmers' College in Kyoto Prefecture—

Kumaji KASUMI

Shortage of successors to farm managers has been a serious problem. But no fundamental solution to this problem has been instituted. Agricultural extension system has tackled this problem based on the farmers' college, but not much success has been attained.

The reasons for this failure are as follows :

- (1) The objectives of the college are, educating farm managers and training specialists, and thus the farmers' college could not specialize in one objective.
- (2) The most of the students come from nonfarms or part-time farms.
- (3) The sizes of the farms where the students come are too small.

The directions to improve the farmers' college are as follows :

- (1) The establishment of an education course for farm managers in newly reclaimed areas constructed by government programs.
- (2) Education of agricultural specialists for local governments, agricultural organizations, and agribusinesses who can contribute to the revitalization of rural area.

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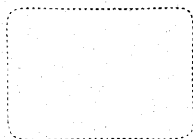
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# THE FARM ACCOUNTING STUDIES

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## CONTENTS

A Theory of Financial Growth Analysis of Farm Management and Its Application ——Growth Analysis and Situation of <i>Jiritsu</i> Dairy Farms—— .....	Kiyoshi KAMEGAI ... ( 1 )
A Study on Scope and Method of Managerial Accounting at Farm Corporations .....	Shiro INAMOTO ... ( 13 )
An Investigation of Improvements in the System of Self-Accounting Book-Keeping .....	Toshio KATSURA ... ( 23 )
Showing on the Flow of Funds Statement For Family Farm Economy .....	Misaku TSUNEAKI ... ( 33 )
A Study about Farm management and Personal Computer .....	Yuzo SHIRAKAWA ... ( 43 )
Resource Allocation and Dependences between Sections .....	Hironori ONO ... ( 51 )
Inter-regional, Inter-seasonal and Time Series Analysis of Rice Production Cost in Thailand .....	Hiroshi TSUJII ... ( 63 )
A Study on the Choice of the Variety of Shiitake Mushroom Spawn .....	Kazushige NISHII ... ( 73 )
Study on Structure of Waggu Caw-calf Operations and Direction of Development in the Operation .....	Yoko NIYAMA ... ( 85 )
Forecast of Financial Management of Large-scale Beef Farms .....	Isao YOKOMIZO ... ( 95 )
Transaction Form and Opportunism of Potatoes for Starch and Chips .....	Atsuyuki ASAMI ... (105)
Consumers' Consciousness and Behavior toward Processed Food Consumption .....	Yuko KAMO ... (115)
Environment Accounting and Policy of Regional Agriculture .....	Takeshi MIYAZAKI ... (125)
A Study on the Farm Mechanization and Institutional Financing in Korea .....	Youngman LEE ... (135)
The History of Farmers' Education Institutions and a New Farmers' College ——With Special Reference of Farmers' College in Kyoto Prefecture—— .....	Kumaji KASUMI ... (147)
Historical Review of 32 Years of Farm Accounting Institute .....	Ryoji ABE ... (159)

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